

Abstract of the Disclosure

An electrostatic chuck 108 is provided on a lower electrode 106 provided inside a processing chamber 102 of an etching apparatus 100, and a conductive inner ring body 112a and an insulating outer ring body 112b are encompassing the outer edges of a wafer W mounted on the chuck surface. The temperatures of the wafer W and the inner and outer ring bodies 112a and 112b are detected by first ~ third temperature sensors 142, 144 and 146. A controller 140 controls the pressure levels of He supplied to the space between the center of the wafer W and the electrostatic chuck 108 via first gas outlet ducts 114 and to the space between the outer edges of the wafer W and the electrostatic chuck 108 via second gas outlet ducts 116 and the quantity of heat generated by a heater 148 inside the outer ring body 112b based upon the information on the temperatures thus detected so that the temperatures of the wafer W and the inner ring body 112a are set roughly equal to each other.

Explanation of Reference Numerals

- 100 etching apparatus
- 102 processing chamber
- 104 processing container
- 106 lower electrode
- 108 electrostatic chuck
- 110 high-voltage DC source
- 112 ring body
- 112a inner ring body
- 112b outer ring body
- 114 first gas supply duct
- 116 second gas supply duct
- 118 first gas supply pipe
- 120 second gas supply pipe
- 121 first open / close valve
- 122 flow rate control valve
- 124 second open / close valve
- 130 third gas supply duct
- 138 gas supply source
- 140 controller
- 142 first temperature sensor
- 144 second temperature sensor
- 146 third temperature sensor
- 148 heater
- 150 variable source
- 152 coolant circulating passage
- 154 matching device
- 158 upper electrode
- 158a gas outlet port
- 160 gas supply pipe

- 162 second discharge pipe
- 164 first pressure regulating unit
- 166 second pressure regulating unit
- 168 manometer
- 170 first discharge pipe
- 172 pressure regulating valve
- 174 third open/ close valve
- 184 O-ring
- 186 third pressure regulating unit
- W wafer